

A Axiomática de Hoare

O Axioma da Atribuição

$$\{P(e)\} x := e \{P(x)\}$$

As Regras de Inferência

$$\frac{\{P\} S \{Q\}, Q \Rightarrow R}{\{P\} S \{R\}}$$

$$\frac{P \Rightarrow Q, \{Q\} S \{R\}}{\{P\} S \{R\}}$$

A Regra da Composição Sequencial

$$\frac{\begin{array}{c} \{P\} S_1 \{Q\} \\ \{Q\} S_2 \{R\} \end{array}}{\{P\} S_1 ; S_2 \{R\}}$$

$$\frac{\{P_{i-1}\} S_i \{P_i\} \forall i = 1, 2, \dots, n}{\{P_0\} S_1 ; S_2 ; \dots ; S_n \{P_n\}}$$

As Regras da Alternativa

$$\frac{\begin{array}{c} \{P \text{ and } B\} S_1 \{Q\} \\ \{P \text{ and not } B\} S_2 \{Q\} \end{array}}{\{P\} \text{ if } B \text{ then } S_1 \text{ else } S_2 \{Q\}}$$

$$\frac{\begin{array}{l} \{P \text{ and } B\} S \{Q\} \\ \{P \text{ and not } B\} \Rightarrow \{Q\} \end{array}}{\{P\} \text{ if } B \text{ then } S \{Q\}}$$

A Regra da Selecção

$$\frac{\{P \text{ and } (x = L_k)\} S_k \{Q\} \quad \forall k = 1, 2, \dots, n}{\{P \text{ and } (x \in [L_1, L_2, \dots, L_n])\} \text{ case } x \text{ of } L_1 : S_1; L_2 : S_2; \dots; L_n : S_n \text{ end } \{Q\}}$$

As Regras da Repetiç o

$$\frac{\{I \text{ and } B\} S \{I\}}{\{I\} \text{ while } B \text{ do } S \{I \text{ and not } B\}}$$

$$\frac{\begin{array}{l} \{P\} S \{I\} \\ \{I \text{ and not } B\} S \{I\} \end{array}}{\{P\} \text{ repeat } S \text{ until } B \{I \text{ and } B\}}$$

$$\frac{\{x \in [a .. b] \text{ and } P([a .. x])\} S \{P([a .. x])\}}{\{P([a .. b])\} \text{ for } x := a \text{ to } b \text{ do } S \{P([a .. b])\}}$$

$$\frac{\{x \in [a .. b] \text{ and } P((x .. b])\} S \{P([x .. b])\}}{\{P([a .. b])\} \text{ for } x := b \text{ downto } a \text{ do } S \{P([a .. b])\}}$$